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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/674,403	10/01/2003	Kun Feng Lee	0941-0845P	5155
2292 7590 11/21/2007 BIRCH STEWART KOLASCH & BIRCH PO BOX 747 FALLS CHURCH, VA 22040-0747			EXAMINER YANG, NELSON C	
			ART UNIT 1641	PAPER NUMBER
			NOTIFICATION DATE 11/21/2007	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

mailroom@bskb.com

Office Action Summary

Application No.

10/674,403

Applicant(s)

LEE ET AL.

Examiner

Nelson Yang

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1641

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 August 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5-13,28 and 29 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5-13,28 and 29 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. Applicant's amendment of claim 1 is acknowledged and has been entered.
2. Applicant's addition of claims 28 and 29 is acknowledged and has been entered.
3. Claims 1, 2, 5-13, 28, and 29 are currently pending.

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1-9, 11-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews [US 5,225,163] in view of Burdon et al. [US 6,572,830] and further in view of Bergh et al. [US 2002/0045265].

With respect to claim 1, Andrews teaches the invention substantially as claimed because Andrews teaches two chambers with inlets in the two chambers (see figure 3). Andrews further teaches reagents (analyzing elements) (column 7, lines 30-35), magnets for magnetic capture (analyzing elements) (column 7, lines 5-10), and viewing chambers for visual inspection (column 31-35), which would assist in the analysis and detection of analytes in the sample. However, Andrews does not teach that the two chambers are formed by three units or that the first and second analyzing elements are replaceable from the first and second chambers respectively.

However Burdon et al. disclose that chambers can be formed by a plurality of green-sheet layers sintered together (column 3, lines 34-42) and further teach that this allows for a wide variety of properties and functionalities useful for chemical and biological applications, and that the device may be provided with different properties in different locations, such as thermal conductivity and optical transmission (column 3, lines 43-51). Burdon et al. further teach that this allows for sensors such as capacitive sensors to become an integral part of the device, with conductive leads lead to the exterior of the device (column 17, line 60 – column 8, line 5).

Furthermore, Bergh et al. teach modular fluidic chips that comprise detectors (para. 0109) that can be mounted fixedly or detachably on a substrate (para. 0011).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to form the Andrews chambers using different units sealed together to form a chamber as taught by Burdon et al. because Burdon et al. teach that a chamber can be formed by different layers that are sealed together. Providing three units such that two chambers are formed (as claimed by Applicants) would have been obvious given the general teachings of Burdon et al. that any chamber can be formed by integrating components such that a chamber is formed and then sealing the components, and one of ordinary skill in the art would have been motivated to do so, in order to provide different properties to the device in different locations. Bergh et al. further shows that fixed and detachable detectors are equivalent structures known in the art. Therefore, because these two detectors were art-recognized equivalents at the time the invention was made, one of ordinary skill in the art at the time of the invention would have found it obvious to substitute a detachable chip for a fixed chip in the invention of Andrews.

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6. With respect to claim 2, Andrews teaches an angled channel segment (36) which delivers reaction fluids into another chamber (38), (col. 7, lines 1-5). Andrews teaches that this angled channel segment (36) provides an isolated area in which to place a magnet for magnetic capture of reaction products (col. 7, lines 5-7, and see figure 3). (Andrews also discloses another embodiment (see figure 7) in which an angled channel is disclosed in general.) The angled channel segment (36) is deemed to be Applicants' claimed pipeline. It is noted that with the modification of the Andrews invention as taught by Burdon et al. as discussed above, the modification results in the angled channel segment (36) being in the second unit and because the angled channel segment (36) is connected to both chambers (33) and (38), the angled channel segment (36) is sequentially connected to the fluid inlet, first lower portion, second upper portion and fluid outlet with an inclined angle, as claimed by Applicant.

7. With respect to claims 5, 6, Burdon et al. teach capacitive sensors to become an integral part of the device, with conductive leads lead to the exterior of the device (column 17, line 60 – column 8, line 5).

8. With respect to claim 7, Andrews teaches the use of reagents (column 7, lines 30-35) which would be biological or chemical sensing elements for antigen-antibody specific binding assays (column 7, lines 13-15).

9. With respect to claims 8, 13 Andrews teaches viewing chambers, which are optical sensing elements, for visual inspection (column 31-35) of the reaction products, from the reagents in the first chamber, while Budon et al. teach the use of capacitive sensors (electrodes) (column 17, lines 60-67).

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10. With respect to claim 9, Andrews teaches the use of reagents (column 7, lines 30-35) which would be biological or chemical sensing elements for antigen-antibody specific binding assays (column 7, lines 13-15).

11. With respect to claim 11, Burdon et al. teach that the green-sheet layers may comprise glass particles (column 3, lines 1-5).

12. With respect to claim 12, Burdon et al. teach an electroosmotic pumping system (column 6, lines 5-10).

13. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews [US 5,225,163] in view of Burdon et al. [US 6,572,830] and in view of Tai et al. [US 20020093143], and further in view of Moles [US 6,293,012].

With respect to claim 10, Andrews and Burdon et al. disclose the invention as substantially claimed, as discussed above. Andrews and Burdon et al. fail to disclose a bolt to combine the first, second, and third units.

Moles, however, teaches that materials held between two stiff metal platens connected by a plurality of bolts, preventing the platens from moving apart from one another, and allow bonding of layers together (column 10, lines 5-20).

Therefore, it would have been obvious to one of ordinary skill in the art to have place the sintered layers of Burdon et al. between to still metal platens connected by bolts in order to prevent the layers from moving apart, and to allow the bonding of the different layers together.

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Claims 18 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andrews [US 5,225,163] in view of Burdon et al. [US 6,572,830] and Bergh et al. [US 2002/0045265] and further in view of Tai et al. [US 2002/0093143].

With respect to claims 18 and 19, Andrews teaches the invention substantially as claimed because Andrews teaches two chambers with inlets in the two chambers (see figure 3). Andrews further teach reagents (analyzing elements) (column 7, lines 30-35), magnets for magnetic capture (analyzing elements) (column 7, lines 5-10), and viewing chambers for visual inspection (column 31-35), which would assist in the analysis and detection of analytes in the sample. However, Andrews does not teach that a first and second sealing element are disposed between the units, as recited by applicants.

Tai et al., however, teach the use of O-rings between layers in microfluidic systems, and teach that they allow for a high coupling force which is strong enough to withstand high pressure, but yet does not require glue or mechanical clamping (para. 0007).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to have used O-rings between the different units, as suggested by Tai et al., in order to seal the device and prevent leaking, while avoiding the use of more complicated and irreversible techniques, such as clamping, gluing, or sintering.

Response to Arguments

14. Applicant's arguments with respect to claims 1, 2 and 5-13 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

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15. No claims are allowed.

16. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nelson Yang whose telephone number is (571) 272-0826. The examiner can normally be reached on 8:30-5:00.

17. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Long V. Le can be reached on (571)272-0823. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

18. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nelson Yang
Patent Examiner
Art Unit 1641


LONG V. LE 11/09/07
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TECHNOLOGY CENTER 1600